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COMMUNICATION AND
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Business Unit Information Systems

EAD/smartAIM

BF Box Installation Instructions

EAD/DOC-FRU0AD-2.0b

HISTORY CHART

VERSION	DATE	CHANGED CHAPTERS	CAUSE OF CHANGE	AUTHOR
0.1	2009-02-18	All sections	New Document	DGo
0.2	2009-03-02	All sections	New Screenshots	DGo
0.4	2009-03-06	-	Added chapter 7 and Error! Reference source not found.	RBe
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0.6	2009-03-09	Chapter 9.1.7	Added MTU Size	DG
0.7	2009-03-07	Chapter	Command adapted	DG
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CONTENTS

1	Important information	6
1.1	References	6
2	Purpose of this document.....	7
3	Software overview	8
4	Overview of an installation	9
4.1	Workflow for a newly delivered BF-Box	9
4.2	Workflow to install the software of a BF-Box	9
5	Preparation before installing the BF-Box	10
5.1	Preparation steps	10
5.2	Update preparation checklist and documentation sheet	11
6	How to apply the image.....	12
6.1	Server hard disk preparation	12
6.1.1	Boot from the Image DVD	12
6.1.2	Welcome screen.....	12
6.1.3	Choose the image to restore	13
6.1.4	Select all partitions to restore	13
6.1.5	Summary of operation	14
6.1.6	Progress of the operation	14
6.1.7	Deployment has been completed successfully.....	15
7	Software update	16
8	BF Box Migration.....	17
8.1	BF Box Migration Declaration	17
8.2	Changes to the BF Box Configuration	17
8.3	Changes of Basic SW.....	17
9	FAQ	18
9.1	Verifying the correct installation/configuration – Restarting of services	18
9.1.1	Application connection status.....	19
9.1.2	Network configuration.....	19
9.1.2.1	Old host files (SonicMQ is supported until the next release).....	19

9.1.2.2	New host file (OracleAQ)	19
9.1.2.3	Verify network device configuration	20
9.1.3	Tomcat Server	20
9.1.3.1	Verify the actual status.....	20
9.1.3.2	Restart the Tomcat Server	20
9.1.3.3	Check if a service is running	20
9.1.4	MySQL	21
9.1.4.1	Verify the installation	21
9.1.4.2	Restart the MySQL Server	21
9.1.5	Java.....	21
9.1.5.1	Verify the installation	21
9.1.6	NTP	21
9.1.6.1	Verify the configuration	21
9.1.6.2	Verify the installation	22
9.1.6.3	Restart the NTP service	22
9.1.6.4	The NTP update can also be run manually	22
9.1.7	MTU Size.....	22
9.1.7.1	Verifying the MTU size	22
9.1.7.2	Changing the MTU size.....	22
9.1.7.3	Changing the MTU size permanently	22
9.2	Log files	23
9.2.1	Check if the BF-BOX connection is establish to EAD	23
9.2.2	Monitor BF-BOX received/sent messeges.....	23
9.3	How to change passwords	24
9.3.1	Root Access	24
9.3.2	BF Box Contingency.....	24
9.4	Setting up IP failover with Heartbeat	25
9.4.1	Host files (OracleAQ).....	25
9.4.2	The Heartbeat configuration	25
9.4.3	Start/Stop the Heartbeat service	27
9.4.4	Enable Heartbeat service during start up on both machines	27
9.4.5	Heartbeat service status.....	28
9.4.6	Log information about Heartbeat	28

ILLUSTRATIONS

Fig. 1: Installation process to install BF-Box from scratch.....9

TABLES

Tab. 1: List of Documents 6

1 Important information

Any software provided via the image CDs/DVD is subject to licensing regulations according to the license agreement of the vendor. You are not allowed to take advantage of software you have not licensed and are therefore not entitled to activate, use or make copies of such software.

1.1 References

Document Name	Revision	Description
[01] ECIT Client Configuration Document	EAD-DOC-FRN1L7-7.4c	---
[02] User Manual Security	EAD-DOC-FRKBWI-4.0b	---
[03] Client Installation Plan		Dedicated document for your organisation describing the (network) set-up of your EAD installation. Please ask your CSO for a copy.

Tab. 1: List of Documents

2 Purpose of this document

By reading this document and taking the steps described herein, a Linux IT skilled employee shall be able to apply software updates that are provided via Image DVD. The Image DVD holds all applications, including the operating system. By applying the Image DVD, the whole installation or only the system partition gets refreshed.

3 Software overview

EAD Release 7 – BF-Box Image Release 7

OS: Red Hat Enterprise Linux Server release 5.7 (Tikanga)

MySQL 5.5.18

Tomcat 7.0.22

Java Version 6 Update 27

4 Overview of an installation

There are several steps to take during and after the installation of an image. As an image always overwrites information and configurations that have been changed after the last application of an image, these things have to be done **every time you apply an image**.

4.1 Workflow for a newly delivered BF-Box

The newly delivered BF Box should not need any further configuration, unless the data supplied for the installation has changed in the meantime. Please ensure that all data of chapter 5.2 Update preparation checklist and documentation sheet is available, stored together with the DVD supplied on a safe place and the backup has been done.

4.2 Workflow to install the software of a BF-Box

The following diagram shows the process for a reinstallation or an upgrade of a BF-Box

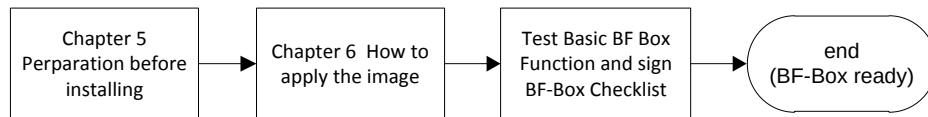


Fig. 1: Installation process to install BF-Box from scratch

5 Preparation before installing the BF-Box

The section (5.1) describes the steps. The second section (5.2) of this chapter contains a check- and documentation list. The intention is that a copy of this page made for every BF-Box, which has to be upgraded to preserve information that may be needed later on.

5.1 Preparation steps

These are the main steps when applying the image:

- Write down any necessary configuration, like network (if applicable for the BF-Box you are going to set up) Identify the IP address, Subnet Mask and Gateway by using Linux commands like “ifconfig” to do that. Write down the Routing information if applicable (commands “netstat -rn”). Eventually copy the content of the “/etc” and “/data/ino-bfbox” folders on removable media.
- Save all data you need later on to a safe environment.

Important folders are as follows:

- “/etc” holds the system wide configuration files
- “/data/ino-bfbox” holds the application configuration and executable
- “/var/log/tomcat” holds all briefing application logs

5.2 Update preparation checklist and documentation sheet

Recommendation: Please make a paper copy of this chapter for each of your BF-Box servers in order to document the preparation of the image upgrade. Also print the BF Box section of the [03] Client Installation Plan showing the interface details chosen.

User names and Password: - Root access (chapter 9.3.1) Name (default="root"¹) Password (default="only2install") - BF contingency (chapter 9.3.2) Name (default="bfbox-user") Password (default="user12!")	Changed to: Name Password Name Password
Workstation name:	
IP address (eth0):	
Subnet Mask (eth0):	
Default Gateway (eth0):	
IP address (eth1):	only if applicable
Subnet Mask (eth1):	only if applicable
Routing	only if applicable
DNS Server(s):	n.a.
MTU Size:	1300
Reading of this manual done:	☐ yes ☐ no
Backup of all configuration files in directory "/data/ino-bfbox" successfully performed:	☐ yes ☐ no
External backup prepared	☐ yes ☐ no

¹ Both the default name and the default password are without "", so "root" shall be typed as root.

6 How to apply the image

6.1 Server hard disk preparation

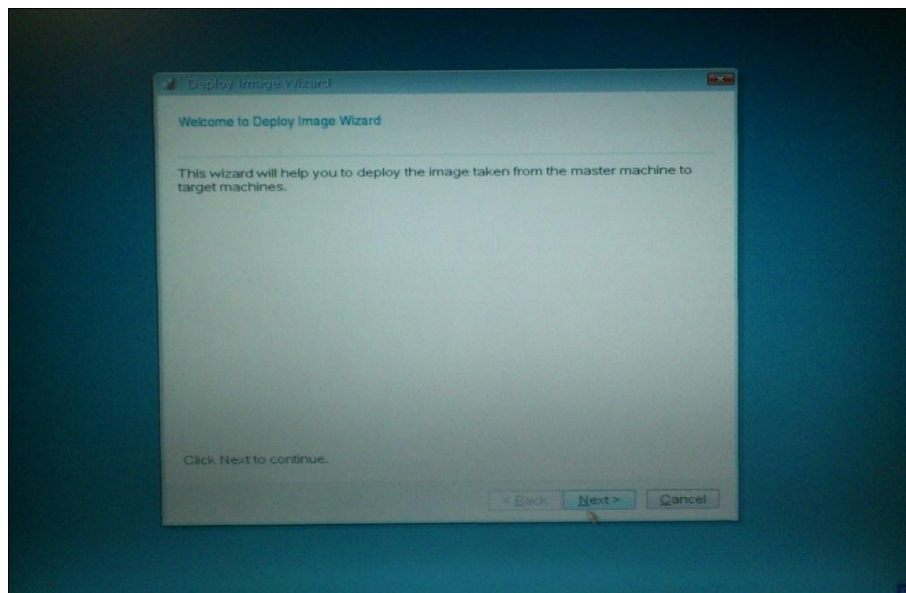
Check the correct Version of the DVD: The latest version is “**Briefing Box R7 V9.2-patch4**” from **2012/04/27**.

6.1.1 Boot from the Image DVD

This article assumes that DVD has **booted successfully**. You should see the following screen:



6.1.2 Welcome screen

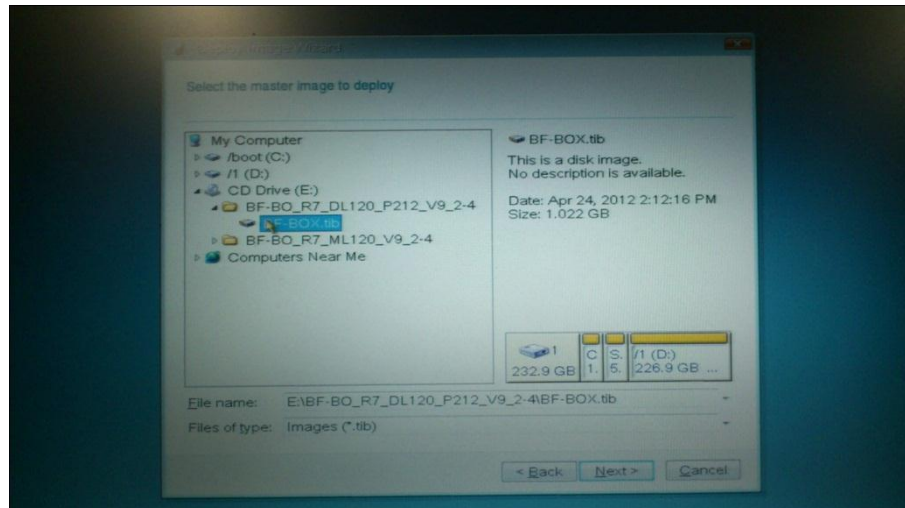


6.1.3 Choose the image to restore

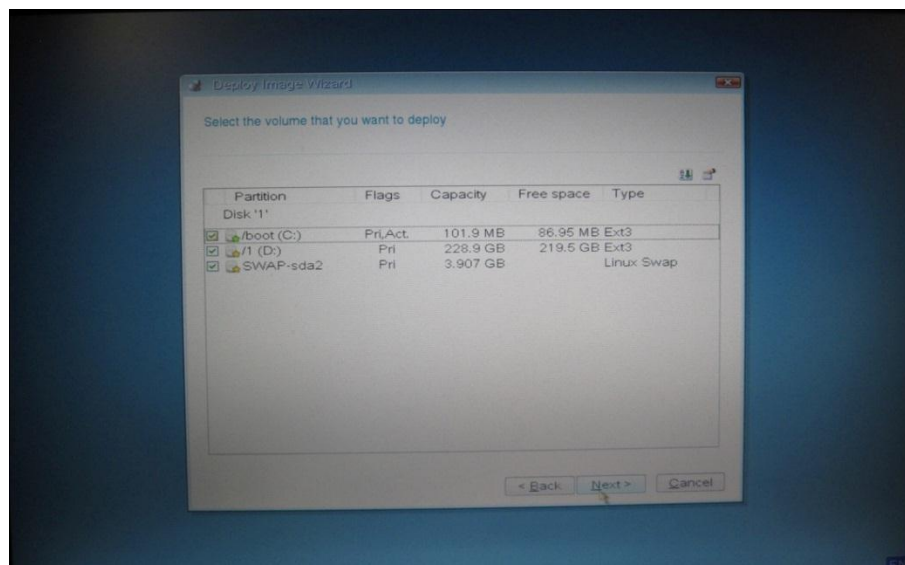
To restore a BF-BOX via system images is supported for the following hardware:

- HP ProLiant ML110 G7
- HP ProLiant DL120 G6 with P212 RAID-Controller

In the next step, choose the CD Drive (E:) and the right image for you hardware:

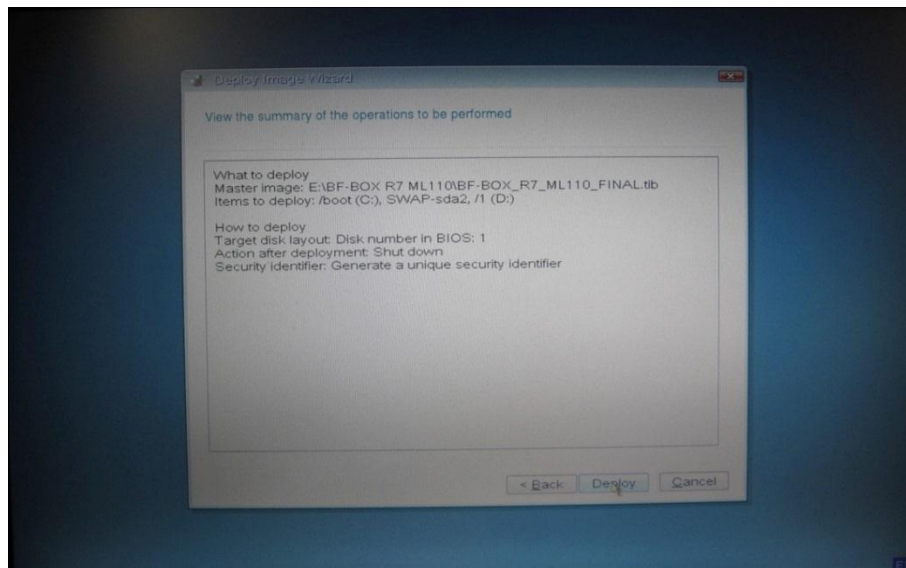


6.1.4 Select all partitions to restore



6.1.5 Summary of operation

Choose “deploy” dialog options



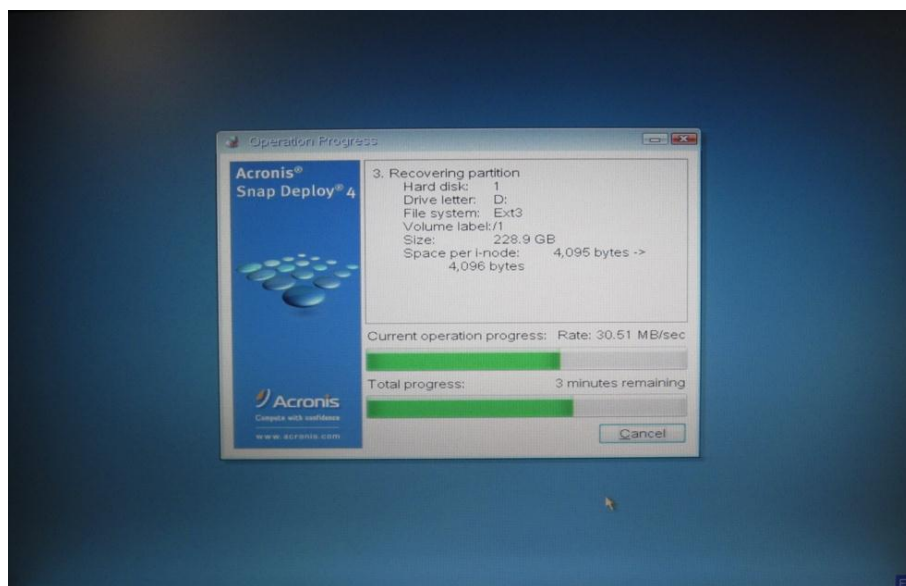
For HP DL120 the following partitions structure will be created:

	Device	Boot	Start	End	Blocks	Id	System
	/dev/cciss/c0d0p1	*	1	26	104448	83	Linux
	/dev/cciss/c0d0p2		26	1532	6145024	82	Linux swap / Solaris
	/dev/cciss/c0d0p3		1532	59844	237912064	83	Linux

For HP ML110 the following partitions structure will be created:

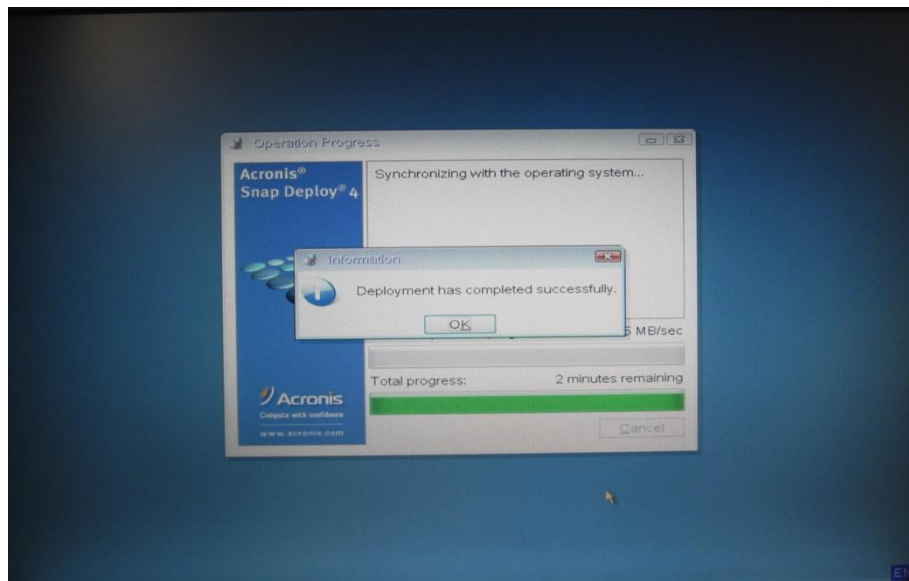
	Device	Boot	Start	End	Blocks	Id	System
	/dev/sda1	*	1	13	104391	83	Linux
	/dev/sda2		14	523	4096575	82	Linux swap / Solaris
	/dev/sda3		524	30401	239995035	83	Linux

6.1.6 Progress of the operation



6.1.7 Deployment has been completed successfully

After the restore has been successfully completed, you will see the following screen



Press **OK** and remove the DVD-Room drive

7 Software update

The BF-Box software update is made available as single download file “ino-bfbox.war” via the EAD Service Desk (e.g. http://files.ead-it.com/BF/EAD-SWI-FRRAUE-1.0b-0_ino-bfbox_9.2-patch4.zip). Follow the steps below to upgrade the software of the BF-Box

1. SSH to your BF-Box and go to ino-bfbox directory:
`cd /data/ino-bfbox/`
2. Stop the Tomcat and MySQL services by executing the following command in a terminal window:
`/etc/init.d/tomcat stop`
`/etc/init.d/mysql stop`
3. Back up your existing “ino-bfbox.war” file:
`mv ino-bfbox.war ino-bfbox.war.old`
4. Downloading the most recent file:
`wget http://files.ead-it.com/BF/EAD-SWI-FRRAUE-1.0b-0_ino-bfbox_9.2-patch4.zip`
5. Extract the war file from the zip file:
`unzip EAD-SWI-FRRAUE-1.0b-0_ino-bfbox_9.2-patch4.zip`
6. Make a file executable:
`chmod +x ino-bfbox.war`
7. First start the MySQL service and then Tomcat service by executing the following command in a terminal window:
`/etc/init.d/mysql start`
`/etc/init.d/tomcat start`
8. Check if a service is running:
`tail -1 /var/log/tomcat/catalina.out`

Expected Result:

`INFO: Server startup in 6104 ms`

8 BF Box Migration

8.1 BF Box Migration Declaration

After successful installation of the BF Box software, a client is requested to verify the basic function of the BF Box, i.e. sending and receiving AFTN messages and to document this in a signed BF Box checklist. Upon receipt of that checklist a client is declared to be migrated to Briefing Facilities. At that moment, the client shall also ensure that

- All BF Box configuration files,
- The BF Box itself,
- The network set-up showing the link to the MHS/AFTN-switch,
- The contingency parameters,

Are correctly documented in his Installation Plan and provide feedback if changes exist.

8.2 Changes to the BF Box Configuration

Any change such as the installation of SW patches (chapter 7) to the BF Box configuration shall result in

- An Update of the Installation Plan (where applicable),
- A new BF Box checklist.

8.3 Changes of Basic SW

Unlike ECITs there is no process to upgrade the BF Box SW or the basic SW with every release. A client shall neither change the configuration nor the SW on a BF Box that was accepted by him with a signed BF Box checklist.

The standard process is to replace any BF Box that is out of its 3 years onsite warranty with a new one that will automatically come with the latest Basic and BF Box SW. During the 3 years lifetime, a software change shall only be deployed upon request by EAD staff.

9 FAQ

9.1 Verifying the correct installation/configuration – Restarting of services

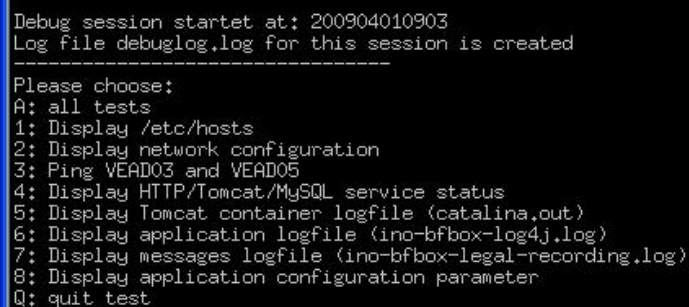
In case of any connection problems it is highly recommended to verify the configuration described in the following chapters before contacting the Servicedesk.

Additionally a test and diagnosis script is available for the system administrator to track connection problems and to create a log file containing important information for further analysis by the service desk:

In a terminal window as root User in the root home directory type:

```
./debuglog.sh
```

A debug script is starting and offering various possibilities to analyse and trace problems.



```
Debug session startet at: 200904010903
Log file debuglog.log for this session is created
-----
Please choose:
A: all tests
1: Display /etc/hosts
2: Display network configuration
3: Ping VEAD03 and VEAD05
4: Display HTTP/Tomcat/MySQL service status
5: Display Tomcat container logfile (catalina.out)
6: Display application logfile (ino-bfbox-log4j.log)
7: Display messages logfile (ino-bfbox-legal-recording.log)
8: Display application configuration parameter
Q: quit test
```

The debug log file will be created in the actual directory.

In case of problems with the BF-Box please open an Issue in the EAD Service Desk application and attach the above created debug log files to this issue.

Please note: This debug log displays and contains only the last 100 lines of the available application logfiles described in chapter “9.2 Log files”. For a complete system analysis it is necessary to attach these together with the debug log file to the issue.

9.1.1 Application connection status

The very first test is to verify if the connection status displayed in the status bar in the lower right corner of the applications main window.

The screenshot shows the 'New FPL' application window. It has a title bar with a question mark icon. Below the title bar are input fields for 'Client name', 'Template Name', 'ARCID', 'ADEP', 'ADES', and a 'Use Client' checkbox. The main area is divided into several sections: 'Addresses' with 'Filing Time' (130830), 'Originator' (LPPZPX), 'Addresses FF', and 'Re-Addressing (AD)'; 'General information' with fields for '(7) Aircraft ID', '(8) Flight Rules', 'Type of Flight', '(9) Number', 'Type of Aircraft', 'Wake Turbulence Cat', and '(10) Equipment'; 'Route information' with fields for '(13) Departure', 'EOBT', '(15) Cruising Speed', 'Route', 'Level', '(16) Destination', 'Total EET', 'Alternate', and '2nd Alternate'; and 'Other information' with '(18) Other Information' (DOF/070813) and 'Notes (not transmitted)'. At the bottom, there is a row of buttons: 'Template', 'PIB', 'Addresses', 'Preview', 'Save', 'Validate', 'Send', and 'Clear'. The 'Clear' button is circled in red. Below the buttons is a status bar with icons and the text 'Send'.

9.1.2 Network configuration

9.1.2.1 Old host files (SonicMQ is supported until the next release)

In a terminal window run the following command:

```
cat /etc/hosts
```

Expected result:

```
127.0.0.1 localhost.localdomain localhost
85.125.227.147 briefing.frequentis.com briefing
194.29.116.49 files.ead-it.com
194.29.117.29 vead01
194.29.117.31 vead03
194.29.117.33 vead05
```

In the expected output the entries for vead03 and vead05 should point the actual EAD production site. Forward this information to your local system administrator.

9.1.2.2 New host file (OracleAQ)

```
cat /etc/hosts
```

Expected result:

```
127.0.0.1  localhost.localdomain localhost
85.125.227.147  briefing.frequentis.com  briefing
194.29.116.49  files.ead-it.com
194.29.117.29  vead01
194.29.117.31  vead03
194.29.117.29  rac1-vip
194.29.117.35  rac1-vip
```

9.1.2.3 Verify network device configuration

In a terminal window run the following command:

```
ifconfig eth0
```

In the expected result the actual IP address can be compared with the target state (see for that chapter 5.2 Update preparation checklist and documentation sheet):

```
eth0      Link encap:Ethernet  HWaddr 2C:41:38:88:45:42
    inet  addr:85.125.227.148  Bcast:85.125.227.191
Mask:255.255.255.192
.....
```

9.1.3 Tomcat Server

9.1.3.1 Verify the actual status

Connect to the http service via telnet:

```
telnet localhost 8080
```

Expected result:

```
[root@box ~]# telnet localhost 8080
Trying 127.0.0.1...
Connected to localhost (127.0.0.1).
Escape character is '^]'.
```

9.1.3.2 Restart the Tomcat Server

In a terminal window run the following commands

```
/etc/init.d/tomcat stop
/etc/init.d/tomcat start
```

9.1.3.3 Check if a service is running

In a terminal window run the following command:

```
ps -ef | grep java | grep tomcat | cut -c10-14
```

Expected result:

```
2978 (Tomcat PID)
```

9.1.4 MySQL

9.1.4.1 Verify the installation

In a terminal window run the following command:

```
/etc/init.d/mysql status
```

Expected result:

```
MySQL running (415) [ OK ]
```

Alternatively connect to the mysql service via telnet:

```
telnet localhost 3306
```

Expected result:

```
[root@box ~]# telnet localhost 3306
Trying 127.0.0.1...
Connected to localhost (127.0.0.1).
Escape character is '^]'.
```

9.1.4.2 Restart the MySQL Server

In a terminal window run the following commands

```
/etc/init.d/mysql stop
/etc/init.d/mysql start
```

NOTE: After restart of MySQL a restart of the TOMCAT Server is required as well.

9.1.5 Java

9.1.5.1 Verify the installation

In a terminal window check the installed Java environment with: :

```
echo $JAVA_HOME
```

Expected result:

```
/usr/java/jdk1.6.0_27
```

9.1.6 NTP

9.1.6.1 Verify the configuration

You should have a “server vea01” definition lines in “/etc/ntp.conf”.

9.1.6.2 Verify the installation

In a terminal window check the running time server with:

```
/etc/init.d/ntpd status
```

Expected result:

```
ntpd (pid 3690) is running...
```

9.1.6.3 Restart the NTP service

In a terminal window run the following commands

```
/etc/init.d/ntpd stop
```

```
/etc/init.d/ntpd start
```

9.1.6.4 The NTP update can also be run manually

```
/etc/init.d/ntpd stop
```

```
ntpdate vead01
```

```
/etc/init.d/ntpd start
```

9.1.7 MTU Size

The Maximum Transfer Unit (MTU) size defines the maximum size of a package that can be transferred in one frame over a network connection. Reducing the MTU size (default: 1300) can help eliminate some connectivity problems.

9.1.7.1 Verifying the MTU size

In a terminal window check the actual MTU size with:

```
ifconfig eth0
```

In the expected result the actual MTU size is displayed:

```
eth0 Link encap:Ethernet HWaddr 00:18:FE:7F:96:D0
```

```
.....
```

```
UP BROADCAST RUNNING MULTICAST MTU:1300 Metric:1
```

```
.....
```

9.1.7.2 Changing the MTU size

In a terminal window change the actual MTU size with:

```
ifconfig eth0 mtu <new MTU size>
```

9.1.7.3 Changing the MTU size permanently

In a terminal window modify the network setup with:

```
cd /etc/sysconfig/network-scripts/ [ENTER]
```

```
vi ifcfg-eth0 [ENTER]
```

...and add or modify the following line:

MTU=1300

9.2 Log files

The BF-Box regularly writes log files, which are located in

/var/log/tomcat

catalina.out – contains all log information about the tomcat container

ino-bfbox-log4j.log – contains all log information about the BF-Box software

ino-bfbox-legal-recording.log – contains all incoming and outgoing messages in textual form.

10 In case of problems with the BF-Box please open an Issue in the EAD Service Desk application and attach the above mentioned log files together with a complete debug log file described in chapter “8 BF Box Migration

10.1 BF Box Migration Declaration

After successful installation of the BF Box software, a client is requested to verify the basic function of the BF Box, i.e. sending and receiving AFTN messages and to document this in a signed BF Box checklist. Upon receipt of that checklist a client is declared to be migrated to Briefing Facilities. At that moment, the client shall also ensure that

- All BF Box configuration files,
- The BF Box itself,
- The network set-up showing the link to the MHS/AFTN-switch,
- The contingency parameters,

Are correctly documented in his Installation Plan and provide feedback if changes exist.

10.2 Changes to the BF Box Configuration

Any change such as the installation of SW patches (chapter 7) to the BF Box configuration shall result in

- An Update of the Installation Plan (where applicable),
- A new BF Box checklist.

10.3 Changes of Basic SW

Unlike ECITs there is no process to upgrade the BF Box SW or the basic SW with every release. A client shall neither change the configuration nor the SW on a BF Box that was accepted by him with a signed BF Box checklist.

The standard process is to replace any BF Box that is out of its 3 years onsite warranty with a new one that will automatically come with the latest Basic and BF Box SW. During the 3 years lifetime, a software change shall only be deployed upon request by EAD staff.

11 FAQ

Verifying the correct installation/configuration – Restarting of services” to this issue.

11.1.1 Check if the BF-BOX connection is establish to EAD

```
tail -f /var/log/tomcat/ino-bfbox-log4j.log
```

Expected result:

```
2012-04-26 20:51:15,018 DEBUG BFBox.KeepAlive0
ino.datauser.bfbox.BriefingFacilityClient inoduRequest.237 -
Answer received:
Session refreshed
```

Press Ctrl-C to stop seeing a tail of logs.

11.1.2 Monitor BF-BOX received/sent messages

```
tail -f /var/log/tomcat/ino-bfbox-legal-recording.log
```

Expected result:

```
2012-04-23 16:50:09,288 LEGAL_RECORD - UserName: BFBox
MetaAction: Message sent to AFTN INODU_P_U_RQ_BFBox
Data: \x01BAC006 231650
GG EUCHZMFP
231650 LOWWZPZX
\x02HIER KAN MEN HET ANTWOORD SCHRIJVEN.
GROET,
UW INSTRUCTEUR

REQ DEP DLA OR CNL PHUBE EHRD-1900-EHMZ
\x0B\x03
```

Press Ctrl-C to stop seeing a tail of logs.

11.2 How to change passwords

11.2.1 Root Access

We do not recommend to change the user name and password, but please note that if this has to be changed according to client procedures it should be noted and stored on a safe place. If lost, the BF box has to be completely re-installed.

In a terminal window run the following command:

```
Passwd root
```

Expected result:

```
Changing password for user root.
```

```
New UNIX password:
```

Input your desired password and confirm with ENTER

Expected result:

```
Retype new UNIX password:
```

Retype your new password and confirm with ENTER

Expected result:

```
passwd: all authentication tokens updated successfully.
```

In case you receive an error message like “*Sorry, passwords do not match*” you have to repeat the password change procedure repeating at 2.

11.2.2 BF Box Contingency

We do recommend changing the user name and password. These credentials should be noted, stored on a safe place and incorporated in the clients’ operational procedures to ensure that they are available during the contingency operation. If lost, they can be reset again using the root access above.

The username / password can be set up directly within the tomcat’s configuration file `tomcat-users.xml` located in:

```
/usr/share/apache-tomcat-7.0.22/conf/tomcat-users.xml
```

Currently the default user name and password are defined in the line shown below:

```
<tomcat-users>
```

```
...
```

```
<user username="bfbox-user" password="user12!" roles="bfbox-user"/>
```

```
...
```

```
</tomcat-users>
```

Please note: A restart of tomcat is necessary after this change was performed, see chapter 9.1.3.2.

11.3 Setting up IP failover with Heartbeat ²

Basically, this is network-based failover through Heartbeat on your briefing servers. Heartbeat is software that performs death-of-node detection.

² Heartbeat is applicable only for DL120 images with P212-RAID-Controller

You can configure BF-Boxes to use a single Virtual IP address shared between two machines in active/passive mode. If the active server fails, the heartbeat also fails and the HA software restarts all briefing services on the passive machine.

There is only a general requirement: both servers must be connected to the same VLAN in order to HA work properly.

Please note that the active and passive machine must have the exact same “/etc/ha.d/ and /data/ino-bfbox/” configuration.

11.3.1 Host files (OracleAQ)

In a terminal window run the following command:

```
cat /etc/hosts
```

Expected result:

```
127.0.0.1    localhost.localdomain localhost
85.125.227.150  briefing.frequentis.com    briefing
85.125.227.148  active-briefing.frequentis.com  active-briefing
85.125.227.149  passive-briefing.frequentis.com passive-briefing
194.29.116.49   files.ead-it.com
194.29.117.29   vead01
194.29.117.31   vead03
194.29.117.29   rac1-vip
194.29.117.35   rac1-vip
```

11.3.2 The Heartbeat configuration

The hostname on the active machine

```
vi /etc/sysconfig/network
```

Example:

```
NETWORKING=yes
NETWORKING_IPV6=no
HOSTNAME=active-briefing.frequentis.com
```

The hostname on the passive machine

```
vi /etc/sysconfig/network
```

Example:

```
NETWORKING=yes
NETWORKING_IPV6=no
```

```
HOSTNAME=passive-briefing.frequentis.com
```

Heartbeat is configured by editing three files in the directory `/etc/ha.d/`: `ha.cf`, `haresources`, and `authkeys`:

ha.cf contains global configuration parameters for Heartbeat:

```
vi /etc/ha.d/ha.cf
```

Example:

```
logfile /var/log/ha-log
logfacility local0
keepalive 2
deadtime 30
initdead 120
bcast eth0
udpport 694
auto_failback on
node active-briefing.frequentis.com
node passive-briefing.frequentis.com
```

haresources contains information about what resources are handled by heartbeat

```
/etc/ha.d/haresources
```

Example:

```
active-briefing.teamead.com 85.125.227.150 mysql tomcat
```

authkeys contains authentication data that allows the two nodes to trust that they are actually talking to each other:

```
cat /etc/ha.d/authkeys
```

Example:

```
auth 2
2 sha1 only2install
```

NOTE: All machines used in the cluster must have identical settings.

11.3.3 Start/Stop the Heartbeat service

In a terminal window run the following commands

```
/etc/init.d/heartbeat start
```

```
/etc/init.d/heartbeat stop
```

11.3.4 Enable Heartbeat service during start up on both machines

Disable mysql/tomcat services during start-up:

```
chkconfig tomcat off
```

```
chkconfig mysql off
```

Expected result:

```
chkconfig --list tomcat
```

```
tomcat          0:off    1:off    2:off    3:off    4:off    5:off    6:off
```

```
chkconfig --list mysql
```

```
mysql           0:off    1:off    2:off    3:off    4:off    5:off    6:off
```

Enable heartbeat service during startup:

```
chkconfig heartbeat on
```

Expected result:

```
chkconfig --list heartbeat
```

```
heartbeat 0:off    1:off    2:on     3:on     4:on     5:on     6:off
```

Restart the BF-Box:

```
reboot
```

11.3.5 Heartbeat service status

```
/etc/init.d/heartbeat status
```

Expected result:

```
heartbeat OK [pid 3168 et al] is running on active-briefing.frequentis.com [active-briefing.frequentis.com]...
```

11.3.6 Log information about Heartbeat

```
tail -f /var/log/ha-log
```

END